

Patent Claims

1. A light emitting diode arrangement, comprising at least one high power light emitting diode (34), the  
5 high power light emitting diode (34) being mounted onto a flexible printed circuit board (10).
2. The light emitting diode arrangement as claimed in claim 1,  
10 in which the high power light emitting diode (34) has a power consumption of at least 300 mW.
3. The light emitting diode arrangement as claimed in claims 1 and 2,  
15 in which the high power light emitting diode (34) is soldered onto the flexible printed circuit board (10).
4. The light emitting diode arrangement as claimed in claim 3,  
20 in which the flexible printed circuit board (10) contains at least one flexible carrier layer (33).
5. The light emitting diode arrangement as claimed in claim 4,  
25 in which the flexible carrier layer (33) contains at least one of the following materials: polyimide, polyethylene naphthalate, polyester, FR4.
6. The light emitting diode arrangement as claimed in claims 1 to 5,  
30 in which the flexible printed circuit board (10) contains a thermally conductive layer (21) which is in thermal contact with the high power light emitting diode (34).  
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7. The light emitting diode arrangement as claimed in claim 6,

in which the thermally conductive layer (21) contains a metal.

8. The light emitting diode arrangement as claimed in  
5 claims 6 and 7,  
in which the thermally conductive layer (21) contains copper.

9. The light emitting diode arrangement as claimed in  
10 claims 6 to 8,  
in which the high power light emitting diode (34) is soldered onto the thermally conductive layer (21).

10. The light emitting diode arrangement as claimed in  
15 one of claims 1 to 9,  
in which the flexible printed circuit board (10) contains electrical conductor tracks (22),(23), the thermally conductive layer (21) and the electrical conductor tracks (22),(23) being situated in one plane  
20 of the flexible printed circuit board (10).

11. The light emitting diode arrangement as claimed in claim 10,  
in which the thermally conductive layer (21) and the  
25 electrical conductor tracks (22),(23) contain the same metal.

12. The light emitting diode arrangement as claimed in claims 1 to 11,  
30 in which an insulating layer (12) is applied to one of the surfaces of the flexible printed circuit board (10).

13. The light emitting diode arrangement as claimed in  
35 claim 12,  
in which the insulating layer (12) has cutouts for making electrical and thermal contact with the high power light emitting diode (34).

14. The light emitting diode arrangement as claimed in  
claims 12 and 13,  
in which the insulating layer (12) contains a soldering  
5 resist.

15. The light emitting diode arrangement as claimed in  
claims 1 to 14,  
in which that side of the flexible printed circuit  
10 board (10) which is remote from the high power light  
emitting diodes (34) has an adhesive-containing layer  
(32).

16. The light emitting diode arrangement as claimed in  
15 claim 15,  
in which the adhesive-containing layer (32) is formed  
by a double sided adhesive tape.

17. The light emitting diode arrangement as claimed in  
20 claims 15 or 16,  
in which the adhesive-containing layer (32) is heat-  
resistant up to temperatures of 250°C.

18. The light emitting diode arrangement as claimed in  
25 claims 15 to 17,  
in which the adhesive-containing layer (32) has a  
thickness of at most 60  $\mu\text{m}$ .

19. The light emitting diode arrangement as claimed in  
30 claims 15 to 18,  
in which the adhesive-containing layer (32) is covered  
with a protective film (31).

20. The light emitting diode arrangement as claimed in  
35 claim 19,  
in which the protective film (31) contains a plastic.

21. The light emitting diode arrangement as claimed in one of the preceding claims,  
in which a multiplicity of high power light emitting diodes (34) are provided, which diodes are connected in series.  
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22. The light emitting diode arrangement as claimed in claim 21,  
in which a pair of contact areas (15) is provided for each high power light emitting diode (34).  
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23. The light emitting diode arrangement as claimed in claim 22,  
which has sections (11) each having a high power light emitting diode (34) and the associated pair of contact areas (15).  
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24. The light emitting diode arrangement as claimed in claim 23,  
in which the sections (11) are arranged as repeating structures.  
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25. The light emitting diode arrangement as claimed in claim 24,  
in which the sections (11) are arranged in a series.  
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26. An illumination device,  
having a light emitting diode arrangement as claimed in one of the preceding claims, a heat sink being predefined, on which the light emitting diode arrangement is applied.  
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27. The illumination device as claimed in claim 26,  
in which the light emitting diode arrangement is adhesively bonded onto the heat sink.  
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28. The illumination device as claimed in claim 26 or 27,

in which the heat sink contains a metal.

29. The illumination device as claimed in claim 26 to 28,

5 in which the heat sink is part of a luminaire housing.

30. The illumination device as claimed in claim 29,  
in which the luminaire housing is the housing for one  
of the following luminaires: automobile interior  
10 illumination, automobile rear illumination, brake  
light, flashing indicator.

31. A method for producing a light emitting diode  
arrangement, firstly an adhesive-containing layer (32)  
15 being applied to the flexible printed circuit board  
(10) and then light emitting diodes (34) being soldered  
onto that side of the flexible printed circuit board  
(10) which is remote from the adhesive-containing layer  
(32).